What is claimed is:

1. A semiconductor memory card that stores at least one audio track, comprising:

a protected area that can be accessed by a device connected to the semiconductor memory card only if the device has been found to be authentic, the protected area storing an encryption key sequence composed of a plurality of encryption keys arranged into a predetermined order; and

an unprotected area that can be accessed by any device connected to the semiconductor memory card, the unprotected area storing at least one audio track and management information,

the at least one audio track including a plurality of encrypted audio objects, and

the management information showing which encryption key, out of the plurality of encryption keys, corresponds to each audio object stored in the unprotected area.

2. A semiconductor memory card according to Claim 1, wherein the management information shows, for each audio object, a storage position of the audio object and a number showing a position in the encryption key sequence of the encryption key that corresponds to the audio object.

1 3. A semiconductor memory card according to Claim 2,

2   wherein each audio track further includes

3   (1) attribute information and

4   (2) link information

5 for each audio object included in the audio track,

6   the attribute information showing a type, out of type

7 (a), type (b), type (c) and type (d), for each audio object,

8   type (a) being an entire audio track,

9   type (b) being a first part of an audio track,

10   type (c) being a middle part of an audio track, and

11   type (d) being an end part of an audio track, and

12   the link information for each audio object that is

13 type (b) or type (c) showing which audio object follows

14 the audio object.

1 4. A semiconductor memory card according to Claim 3,

2   wherein the plurality of audio objects includes:

3   at least one audio object that only contains valid

4 data that needs to be played back; and

5   at least one audio object that contains (1) valid

6 data and (2) invalid data located at least one of before

7 and after the valid data, the invalid data not needing to

8 be played back,

9   each audio track further including block information

10 for each audio object in the audio track, the block

11 information including:

162

12   an offset measured from the storage position of the

13 corresponding audio object given in the management

14 information; and

15   length information showing a length of the valid data

16 that starts from a position indicated by the offset,

17   the attribute information for an audio object showing

18 whether the valid data indicated by the offset and the length

19 information

20   (a) corresponds to an entire audio track,

21   (b) corresponds to a first part of an audio track,

22   (c) corresponds to a middle part of an audio track,

23 or

24   (d) corresponds to an end part of an audio track.

1 5. A semiconductor memory card according to Claim 4,

2   wherein audio tracks can be played back according

3 to standard playback or intermittent playback,

4   standard playback being a mode where the valid data

5 in the audio objects composing the audio tracks is played

6 back without any valid data being omitted and

7   intermittent playback being a mode where (1) omission

8 of valid data equivalent to a first period and (2) playback

9 of valid data equivalent to a second period, are repeated,

10   each audio track further including a plurality of

11 pieces of entry position information that show internal

12 positions of the valid data within the audio object at

13 intervals that are equivalent to the first period,

14   and the block information for an audio object showing:

15   the offset that indicates a difference between (1)

16 the internal position shown by a first piece of entry

17 position information for the audio object and (2) the

18 storage position for the audio object given in the

19 management information; and

20   a length of the valid data that starts at a position

21 indicated by the offset.

1 6. A playback apparatus for a semiconductor memory card,

2   the semiconductor memory card including (1) a

3 protected area that can be accessed by a device connected

4 to the semiconductor memory card only if the device has

5 been found to be authentic, the protected area storing an

6 encryption key sequence composed of a plurality of

7 encryption keys arranged into a predetermined order, and

8 (2) an unprotected area that can be accessed by any device

9 connected to the semiconductor memory card, the unprotected

10 area storing at least one audio track and management

11 information, the at least one audio track including a

12 plurality of encrypted audio objects, and the management

13 information showing which encryption key, out of the

14 plurality of encryption keys, corresponds to each audio

15 object stored in the unprotected area,

16   the playback apparatus comprising:

17   reading means for reading one of the plurality of

18 audio objects included in the at least one audio track from

19 the semiconductor memory card and reading an encryption

20 key that corresponds to the read audio object from the

21 encryption key sequence stored in the protected area of

22 the semiconductor memory card;

23   decrypting means for decrypting the read audio object

24 using the read encryption key; and

25   playback means for playing back the decrypted audio

26 object,

27   wherein when the decrypting means has finished

28 decrypting the read audio object, the reading means

29   reads a different audio object included in an audio

30 track,

31   reads an encryption key corresponding to the different

32 audio object from the encryption key sequence, and

33   supplies the newly read encryption key to the

34 decrypting means.

1 7. A recording apparatus for recording a title composed

2 of a plurality of contents onto a semiconductor memory card,

3 the recording apparatus comprising:

4   encrypting means for assigning at least one of a

5 plurality of encryption keys to each content included in

6 the title, and encrypting each content using the encryption

7 keys assigned to the contents to produce a plurality of

8   audio objects; and

9   recording means for recording onto the semiconductor

10   memory card the plurality of encryption keys as an

11   encryption key sequence and the plurality of audio objects

12   as at least one audio track.

1   8. A recording apparatus according to Claim 7,

2   wherein after recording the plurality of encryption

3   keys and the plurality of audio objects, the recording means

4   also records management information onto the semiconductor

5   memory card, the management information showing, for each

6   audio object, correspondence between a region on the

7   semiconductor memory card storing the audio object and a

8   storage position of the encryption key corresponding to

9   the audio object.

1   9. A recording apparatus according to Claim 8,

2   wherein for each audio object, the recording means

3   also records attribute information and link information

4   onto the semiconductor memory card,

5   the attribute information for each audio object

6   showing a type, out of type (a), type (b), type (c) and

7   type (d),

8   type (a) being an entire audio track,

9   type (b) being a first part of an audio track,

10   type (c) being a middle part of an audio track,

166

11   and

12   type (d) being an end part of an audio track,

13   and

14   the link information for each audio object that is

15   type (b) or type (c) showing which audio object follows

16   the audio object.

1   10. A recording apparatus for a semiconductor memory card,

2   comprising:

3   first generating means for successively generating

4   audio frames from an input signal received from outside

5   the recording apparatus, an audio frame being a smallest

6   amount of data that can be independently decoded;

7   writing means for creating a file on the

8   semiconductor memory card and writing the successively

9   generated audio frames into the file;

10   second generating means for generating, whenever

11   the writing means has written a predetermined number of

12   audio frames into a file, a piece of entry information

13   showing a data length of an audio element that is composed

14   of the audio frames written into the file,

15   wherein whenever the second generating means has

16   generated a predetermined number of pieces of entry

17   information, the writing means creates a new file and writes

18   the audio frames successively generated thereafter into

19   the new file.

1 11. A computer-readable storage medium storing a program

2 which, when executed by a computer, has the computer play

3 back data from a semiconductor memory card,

4   the semiconductor memory card including (1) a

5 protected area that can be accessed by a device connected

6 to the semiconductor memory card only if the device has

7 been found to be authentic, the protected area storing an

8 encryption key sequence composed of a plurality of

9 encryption keys arranged into a predetermined order, and

10 (2) an unprotected area that can be accessed by any device

11 connected to the semiconductor memory card, the unprotected

12 area storing at least one audio track and management

13 information, the at least one audio track including a

14 plurality of encrypted audio objects, and the management

15 information showing which encryption key, out of the

16 plurality of encryption keys, corresponds to each audio

17 object stored in the unprotected area,

18   the program comprising:

19   a reading step for reading one of the plurality of

20 audio objects included in the at least one audio track from

21 the semiconductor memory card and reading an encryption

22 key that corresponds to the read audio object from the

23 encryption key sequence stored in the protected area of

24 the semiconductor memory card;

25   a decrypting step for decrypting the read audio object

26 using the read encryption key; and

27   a playback step for playing back the decrypted audio

28 object,

29   wherein when the decrypting step has finished

30 decrypting the read audio object, the reading step

31   reads a different audio object included in an audio

32 track,

33   reads an encryption key corresponding to the different

34 audio object from the encryption key sequence, and

35   supplies the newly read encryption key to the

36 decrypting step.

1 12. A computer-readable storage medium storing a program

2 which, when executed by a computer, has the computer record

3 data onto a semiconductor memory card,

4   the program including:

5   an encrypting step for assigning at least one of

6 a plurality of encryption keys to each content included

7 in the title, and encrypting each content using the

8 encryption keys assigned to the contents to produce a

9 plurality of audio objects;

10   a recording step for recording onto the semiconductor

11 memory card the plurality of encryption keys as an

12 encryption key sequence and the plurality of audio objects

13 as at least one audio track.

1 13. A computer-readable storage medium according to Claim

2 12,·

3   wherein after recording the plurality of encryption

4 keys and the plurality of audio objects, the recording step

5 also records management information onto the semiconductor

6 memory card, the management information showing, for each

7 audio object, correspondence between a region on the

8 semiconductor memory card storing the audio object and a

9 storage position of the encryption key corresponding to

10 the audio object.

1 14. A computer-readable storage medium according to Claim

2 13,

3   wherein for each audio object, the recording step

4 also records attribute information and link information

5 onto the semiconductor memory card,

6   the attribute information for each audio object

7 showing a type, out of type (a), type (b), type (c) and

8 type (d),

9   type (a) being an entire audio track,

10   type (b) being a first part of an audio track,

11   type (c) being a middle part of an audio track,

12   and

13   type (d) being an end part of an audio track,

14 and

15   the link information for each audio object that is

16 type (b) or type (c) showing which audio object follows

170

17　the audio object.

1　15. A computer-readable storage medium storing a program

2　which, when executed by a computer, has the computer record

3　data onto a semiconductor memory card,

4　　　　the program comprising

5　　　　a first generating step for successively generating

6　audio frames from an input signal received from outside

7　the recording apparatus, an audio frame being a smallest

8　amount of data that can be independently decoded;

9　　　　a writing step for creating a file on the

10　semiconductor memory card and writing the successively

11　generated audio frames into the file;

12　　　　a second generating step for generating, whenever

13　the writing step has written a predetermined number of audio

14　frames into a file, a piece of entry information showing

15　a data length of an audio element that is composed of the

16　audio frames written into the file,

17　　　　wherein whenever the second generating step has

18　generated a predetermined number of pieces of entry

19　information, the writing step creates a new file and writes

20　the audio frames successively generated thereafter into

21　the new file.

1　16. A playback method for playing back data from a

2　semiconductor memory card,

3   the semiconductor memory card including (1) a

4   protected area that can be accessed by a device connected

5   to the semiconductor memory card only if the device has

6   been found to be authentic, the protected area storing an

7   encryption key sequence composed of a plurality of

8   encryption keys arranged into a predetermined order and

9   (2) an unprotected area that can be accessed by any device

10   connected to the semiconductor memory card, the unprotected

11   area storing at least one audio track and management

12   information, the at least one audio track including a

13   plurality of encrypted audio objects, and the management

14   information showing which encryption key, out of the

15   plurality of encryption keys, corresponds to each audio

16   object stored in the unprotected area,

17   the playback method comprising:

18   a reading step for reading one of the plurality of

19   audio objects included in the at least one audio track from

20   the semiconductor memory card and reading an encryption

21   key that corresponds to the read audio object from the

22   encryption key sequence stored in the protected area of

23   the semiconductor memory card;

24   a decrypting step for decrypting the read audio object

25   using the read encryption key; and

26   a playback step for playing back the decrypted audio

27   object,

28   wherein when the decrypting step has finished

29 decrypting the read audio object, the reading step

30   reads a different audio object included in an audio

31 track,

32   reads an encryption key corresponding to the different

33 audio object from the encryption key sequence, and

34   supplies the newly read encryption key to the

35 decrypting step.

1 17. A recording method for recording a title composed of

2 a plurality of contents onto a semiconductor memory card,

3   the recording method comprising:

4   an encrypting step for assigning at least one of a

5 plurality of encryption keys to each content included in

6 the title, and encrypting each content using the encryption

7 keys assigned to the contents to produce a plurality of

8 audio objects; and

9   a recording step for recording onto the semiconductor

10 memory card the plurality of encryption keys as an

11 encryption key sequence and the plurality of audio objects

12 as at least one audio track.

1 18. A recording method according to Claim 17,

2   wherein after recording the plurality of encryption

3 keys and the plurality of audio objects, the recording step

4 also records management information onto the semiconductor

5 memory card, the management information showing, for each

6   audio object, correspondence between a region on the

7   semiconductor memory card storing the audio object and a

8   storage position of the encryption key corresponding to

9   the audio object.

1   19. A recording method according to Claim 18,

2   wherein for each audio object, the recording step

3   also records attribute information and link information

4   onto the semiconductor memory card,

5   the attribute information for each audio object

6   showing a type, out of type (a), type (b), type (c) and

7   type (d),

8   type (a) being an entire audio track,

9   type (b) being a first part of an audio track,

10   type (c) being a middle part of an audio track,

11   and

12   type (d) being an end part of an audio track,

13 and

14   the link information for each audio object that is

15 type (b) or type (c) showing which audio object follows

16 the audio object.

1   20. A recording method for recording data onto a

2   semiconductor memory card, comprising

3   a first generating step for successively generating

4   audio frames from an input signal received from outside

174

5 the recording apparatus, an audio frame being a smallest

6 amount of data that can be independently decoded;

7   a writing step for creating a file on the

8 semiconductor memory card and writing the successively

9 generated audio frames into the file;

10   a second generating step for generating, whenever

11 the writing step has written a predetermined number of audio

12 frames into a file, a piece of entry information showing

13 a data length of an audio element that is composed of the

14 audio frames written into the file,

15   wherein whenever the second generating step has

16 generated a predetermined number of pieces of entry

17 information, the writing step creates a new file and writes

18 the audio frames successively generated thereafter into

19 the new file.